

# Application note n° 78

## Functionalisation of a PP by atmospheric plasma

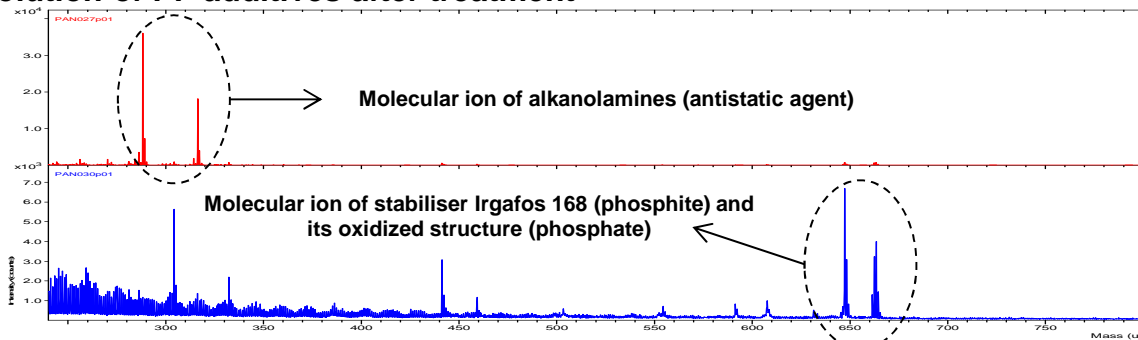
**Subject:** Behaviour of PP additives after a treatment by nitrogen atmospheric plasma.

**Techniques:** **XPS and ToF-SIMS**

- ✓ XPS : elemental and quantitative analysis, chemical environment
- ✓ ToF-SIMS : molecular analysis, additives identification

### Résultats:

#### 1. Evolution of PP additives after treatment



→ Elimination of antistatic agents and enrichment of thermal stabilisers

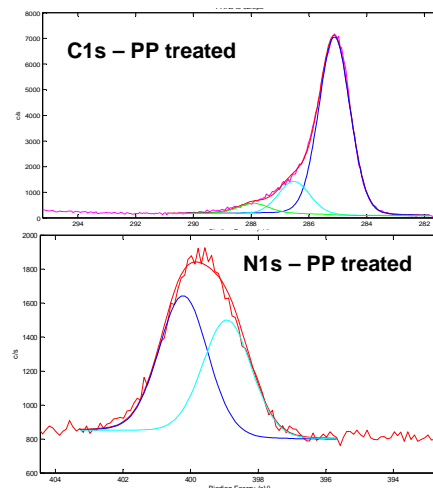
#### 2. Chemical functionalities grafted on PP surface

##### 2.1 Quantitative elemental composition

	C % at.	O % at.	N % at.
untreated PP	>99.5	<0.5	-
treated PP	84.5	4.8	10.7

→ Nitrogen graft and increase of oxygen rate

##### 2.2 Chemical structures of carbon and nitrogen after treatment



### Conclusion :

The treatment leads to a significant evolution of the additives present at the extreme surface of the PP coating. Measurement of grafting ratio of nitrogen and determination of chemical environments of nitrogen on the treated coating.